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## Scientific Areas of Integrated Review Groups (IRGs)

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Emerging Technologies and Training in Neurosciences IRG [ETTN]

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- [Molecular Neurogenetics Study Section \[MNG\]](#)
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## Molecular Neurogenetics Study Section [MNG]

[\[MNG Membership Roster\]](#) [\[MNG Meeting Rosters\]](#)

The Molecular Neurogenetics (MNG) study section reviews applications that have their primary focus aimed at applying molecular genetic approaches in a neuroscience context. While this is a multidisciplinary area, the expectation is that projects will always have potential examination of a neuroscience question although they may not be hypothesis-driven in initial stages.

Specific Areas covered by MNG:

- Molecular genetic tools used to study mechanisms underlying neurodegeneration, addiction, and normal neuronal functions.
- Epigenetic regulation: neural gene expression including chromatin remodeling.
- Neurogenetic variation: both in humans and model systems.
- Methods for gene delivery: exogenous genes and silencers to specific neurons.
- Molecular imaging technologies: to study translational and transcriptional regulation, as well as gene expression profiling, in neurons and glia.
- Neuronal phenotypes: Analysis and refinement of phenotypic characteristics.

**The study sections with most closely related areas of similar science listed in rank order are:**

[Neurotransporters, Receptors, Channels and Calcium Signaling Study Section \[NTRC\]](#)

[Synapses, Cytoskeleton and Trafficking Study Section \[SYN\]](#)

[Pathophysiological Basis of Mental Disorders and Addictions \[PMDA\]](#)

[Neural Basis of Psychopathology, Addictions and Sleep Disorders Study Section \[NPAS\]](#)

[Cellular and Molecular Biology of Neurodegeneration \[CMND\]](#)

[Genetics of Health and Disease Study Section \[GHD\]](#)

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## Neurotechnology Study Section [NT]

[\[NT Membership Roster\]](#) [\[NT Meeting Rosters\]](#)

The Neurotechnology (NT) study section reviews applications to develop and utilize computational, informatic, imaging, biophysical, and bioengineering approaches for studying fundamental problems in neuroscience. While the multidisciplinary nature of NT covers a wide range of technologies, the central theme is a neuroscience context. Proposals need not be hypothesis driven, if the emphasis is on technique development or application. Specific areas covered by NT:

- Computational and mathematical analyses: Modeling and simulation of neuronal ensembles; neural signal processing software.
- Neural imaging from molecular, cellular, or network level to whole brain: MRI, DTI visualization of brain lesions and abnormalities; fMRI, EEG, MEG localization of disorder-related neuronal activity; TMS optimization; algorithms and other tools for neuroimaging analysis.
- Informatics-based study of nervous systems: Multi-modal brain atlasing; database construction, integration, and sharing; neuroscience-focused knowledge environments.
- Application of new or emerging bioengineering or biophysical approaches to the structure, function, or disorders of the nervous system.
- Electrode-based brain monitoring: Multi-electrode array design and optimization; device-neural tissue interfaces
- Neuroprosthetic device development
- Bioengineering approaches to nervous system remodeling: Scaffolds for nerve regeneration; in vitro platforms for manipulation of neuronal differentiation and outgrowth; microfluidically controlled release of compounds;

**The study sections with most closely related areas of similar science listed in rank order are:**

[Biomedical Imaging Technology \[BMIT\]](#)

[Neurogenesis and Cell Fate Study Section \[NCF\]](#)

[Neurodifferentiation, Plasticity, and Regeneration Study Section \[NDPR\]](#)

[Modeling and Analysis of Biological Systems \[MABS\]](#)

## Brain Disorders and Related Neurosciences Fellowship Study Section [F01]

### [\[F01 Roster\]](#)

The F01 study section reviews fellowship applications with an emphasis on clinical neuroscience and disease. The applications investigate aspects of neuroplasticity, neurodegeneration, neuroimmunology, developmental brain disorders, addiction and sleep disorders, and often employ brain imaging, electrophysiological recording, deep brain stimulation or computational modeling. The specific subjects addressed by F01 include:

- Genetic, transgenic and other animal models of Parkinson's, Alzheimer's and Huntington's diseases.
- Therapeutic treatments for brain injury and diseases including neuroprotection, immunotherapeutics, cell transplantation, nanotechnology and deep brain stimulation.
- In vivo neuroplasticity and neuroprotection studies related to epilepsy and other brain diseases.
- Therapeutic strategies to enhance recovery of function after spinal cord injury, stroke, ischemia and traumatic brain injury.
- In vivo studies of mechanisms underlying autism, schizophrenia, depression and bipolar disorders.
- Therapeutic approaches for behavioral, cognitive and emotional disorders.
- Pharmacotherapy for substance abuse disorders.
- Studies of anterior eye diseases.
- In vivo analysis of mechanisms and therapeutics for central nervous system tumors.

**Fellowship study sections with most closely related areas of similar science are:**

[Behavioral Neuroscience Fellowship Study Section \[F02A\]](#)

[Sensory, Motor and Cognitive Neuroscience Fellowship Study Section \[F02B\]](#)

[Biochemical and Molecular Neuroscience Fellowship Study Section \[F03A\]](#)

[Biophysical and Physiological Neuroscience Fellowship Study Section \[F03B\]](#)

## Behavioral Neuroscience Fellowship Study Section [F02A]

### [\[F02A Roster\]](#)

The F02A study section reviews fellowship applications with an emphasis on behavioral studies designed to further understanding of the nervous system at an integrative, systems level. Applications in this study section often employ a behavioral paradigm, coupled with a non-behavioral approach such as brain Imaging, microdialysis, In vivo electrophysiological recording, or genetic studies such as analysis of early gene expression, gene suppression/knockout studies or epigenetic manipulations. The specific subjects addressed by F02a include:

- Interactions between environment and neural development, such as studies into the effects of social interaction / isolation, stress, aggression, maternal-offspring interaction or aging.
- The effects of hormones (HPA axis) on behavior during development or normal adult function, such as studies examining acute or chronic stress, sex differences or maternal responses.
- The interaction of circadian rhythms and behavior and including feeding, social interaction, sleep-wake cycles and hibernation.
- Responses to motivational stimuli such as food, fear and stress, as well as behavior related to drugs of abuse such as reward, drug sensitization, drug seeking and drug relapse.
- Learning and memory processes, especially those centered in the limbic system or PreFrontal Cortex, such as fear conditioning, spatial context memory or reward.
- Neurotoxicology.

**Fellowship study sections with most closely related areas of similar science are:**

## Sensory, Motor and Cognitive Neuroscience Fellowship Study Section [F02B]

### [\[F02B Roster\]](#)

The F02B study section reviews fellowship applications with an emphasis on understanding normal sensory, motor or sensorimotor function, as well as visual, somatosensory and nociceptive information processing, integration of multisensory information, and neural correlates of attention and cognition. Examples of specific subjects addressed by F02B include:

- Studies of motor control in animal models ranging from invertebrates to humans, focusing on cortical, subcortical, and spinal systems underlying locomotion and other motor behaviors utilizing methods ranging from cellular/molecular neurobiology to neurophysiology to human psychophysical and imaging approaches.
- Sensorimotor integration, such as studies of the rodent whisker-barrel system, birdsong and studies of proprioception.
- Mechanisms of touch, mechanosensation, thermosensation, encoded by somatosensory cortex as well as subcortical and spinal systems, assayed via molecular, anatomical, electrophysiological and behavioral methods.
- Mechanisms of pain and analgesia, ranging from studies of primary afferents to spinal circuits to central processes involved in nociception.
- Studies of anatomical and neurophysiological substrates of central visual processes, such as object and motion perception, binocular processes and studies of cortical plasticity at cellular and network levels.
- Topics in Cognitive Neuroscience, such as studies of attention, face and object perception, motor learning and reward mechanisms using fMRI and other imaging approaches.
- Studies of interactions of sensory modalities, such as interactions of auditory and visual systems and investigations of hand-eye coordination.

**Fellowship study sections with most closely related areas of similar science are:**

[Brain Disorders and Related Neuroscience \(F01\)](#)  
[Behavioral Neuroscience \(F02A\)](#)  
[Biochemical and Molecular Neuroscience \(F03A\)](#)  
[Cognition, Language and Perception Fellowship Study Section \(F12A\)](#)  
[Psychopathology, Developmental Disabilities, Stress and Aging Fellowship Study Section \(F12B\)](#)

## Biochemical and Molecular Neuroscience Fellowship Study Section [F03A]

### [\[F03A Roster\]](#)

The F03A study section reviews fellowship applications on the basic cellular and molecular biology of neuronal, glial, retinal and other excitable cells (including chromaffin cells, neuroendocrine cells and muscle cells); the fundamental mechanisms of neuronal cell function, including those relevant to disease processes; the general mechanisms underlying cell death; the mechanisms underlying the initial formation of, as well as cell specialization and differentiation in the developing nervous system; the mechanisms underlying oscillatory events; the mechanisms that specify or influence migratory events and the development, aging, and regeneration of neuronal connectivity; and the consequences of exposure to psychoactive drugs on these processes. Examples of specific areas covered are listed below:

- Synaptic plasticity
- Cytoskeleton and trafficking
- Progenitor and stem cells
- Neural development and differentiation
- Axon outgrowth/ regeneration
- Glial biology/inflammation/myelination
- Circadian mechanisms

- Neurodegeneration/apoptosis

**Fellowship study sections with most closely related areas of similar science are:**

[Brain Disorders and Related Neuroscience \(F01\)](#)  
[Behavioral Neuroscience \(F02A\)](#)  
[Sensory, Motor, and Cognitive Neuroscience \(F02B\)](#)  
[Biophysical and Physiological Neuroscience \(F03B\)](#)  
[Biophysical and Biochemical Sciences \(F04B\)](#)  
[Cell Biology and Development \(F05\)](#)

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## Biophysical and Physiological Neuroscience Fellowship Study Section [F03B]

### [\[F03B Roster\]](#)

Areas of interest encompassed by this study section include the basic cellular and molecular physiology of neurons, glial, retinal, and other excitable cells (including chromaffin cells, neuroendocrine cells and muscle cells); the structural and functional characteristics of ion channels and transporters; the mechanisms by which extra- and intracellular signals are transduced; the structure and function of the transducers themselves; cellular regulation/physiology; neurochemical and pharmacological mechanisms, including the actions of psychoactive drugs; and the development of therapeutic compounds. Examples of specific areas covered, as they relate to neuronal and glial cells, are listed below.

- Basic cellular and molecular physiology of neurons, Glial, retinal, and other excitable cells;
- Mechanisms by which extra-and intracellular signals are transduced;
- Structure and function of the transducers;
- Cellular regulation/physiology;
- Neurochemical and pharmacological mechanisms, including the actions of psychoactive drugs;
- Development of therapeutic compounds.

**Fellowship study sections with most closely related areas of similar science are:**

[Brain Disorders and Related Neuroscience \(F01\)](#)  
[Behavioral Neuroscience \(F02A\)](#)  
[Sensory, Motor, and Cognitive Neuroscience \(F02B\)](#)  
[Biochemical and Molecular Neuroscience \(F03A\)](#)  
[Chemical and Bioanalytical Sciences \(F04B\)](#)

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## Clinical Neurophysiology, Devices, Auditory Devices and Neuroprosthesis Small Business SEP [ETTN (10)]

### [\[ETTN \(10\) Roster\]](#)

This small business study section (ETTN E10) include developing new monitoring devices (amplifiers, electrodes) and analyses tools for EEG and related signals (ERPs) for applications in the fields of epilepsy, sleep disorders, neurological critical care, and some other miscellaneous applications such as cognitive alterations. New applications of imaging methodologies and ancillary tools for diagnostics and research applications are also reviewed in this study section. Implantable electrodes and various aspects of neuroprosthetics devices (new arrays, telemetry, external power, etc.) and their clinical and research applications are also covered. The study section also reviews applications related to monitoring and interventional tools for the neurovascular defects (such as aneurysms), stroke, and ICP monitoring. This study section also reviews applications dealing with the auditory system and hearing, including enhancing hearing of impaired individuals, diagnostic audiometry and devices or processes related to the neurobiology of the auditory system. Specific areas covered include:

- Ways to improve prosthetic limbs (comfort, fit, control).
- Improved detection and treatment of stroke patients.
- Improved detection of traumatic brain injuries, especially mild to moderate ones that may go undetected in the field.
- Improved ability to detect and treat seizures, by improving the electrode placement or improving the capability for a non-neurologist to do it in the emergency room.

- Methods to improve and detect sleep disorders.
- Development of auditory devices to allow better hearing in noisy environments to cochlear implants to improve hearing.

**Study sections with most closely related areas of similar science listed in rank order are:**

[SSMI\(10\) - Small Business: Biomedical Devices and Bioengineering](#)

[SBMI\(10\) - Small Business: Medical Imaging](#)

[ETTN\(13\) - Molecular, Cellular and Developmental Neurobiological Small Business Applications](#)

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## Pharmacology and Diagnostics for Neuropsychiatric Disorders and Neural Systems Small Business SEP [ETTN (11)]

### [\[ETTN \(11\) Roster\]](#)

This study section reviews SBIR and STTR applications concerned with the diagnosis and treatment of neurological and psychiatric disease. Applications include medicinal chemistry studies aimed at identifying lead therapeutic compounds or developing new diagnostic products. Other applications may focus on Investigational New Drug (IND) enabling studies or Proof-Of-Concept clinical studies on either IND approved agents or new indications for previously approved therapeutics. Emphasis is placed on the near term development of specific products with commercial viability being an important consideration. Specific areas covered by ETTN (11) include:

- Neuropathological events such as Stroke, Spinal Cord Injury and Traumatic Brain Injury.
- Neurodegenerative disorders such as Multiple Sclerosis, Alzheimer's, Huntington's and Parkinson's diseases.
- Psychiatric disorders such as Autism, Depression and Schizophrenia.
- Neurological disorders such as Chronic pain, Migraine and Neuropathic pain.
- Alcoholism and Drug Addiction.

**Study sections with most closely related areas of similar science listed in rank order are:**

[With the Genes, Genomes and Genetics \[GGG\] IRG](#)

[With the Risk, Prevention and Health Behavior \[RPHB\] IRG](#)

[With the Biobehavioral and Behavioral Processes \[BBBP\] IRG](#)

[With the Musculoskeletal, Oral, and Skin Sciences \[MOSS\] IRG](#)

[With the Biology of Development and Aging \[BDA\] IRG](#)

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## Visual Systems Small Business SEP [ETTN (12)]

### [\[ETTN\(12\) Roster\]](#)

The Visual System small business study section (ETTN E12) reviews applications concerned with novel medical devices, monitoring systems and adaptation/improvement of existing technologies for normal and pathologic states of the eye. Also included is the development of devices to aid the blind and visually impaired. Specific areas covered include:

- Devices to enable the blind or people with low vision the ability to function more independently.
- Devices to enable diagnosis of specific ocular conditions more definitely or easier by a non-specialist.
- Improvements in the treatment of specific ocular disorders.

**Study sections with most closely related areas of similar science listed in rank order are:**

[SSMI-Q\(10\) Small Business: Biomedical Devices and Bioengineering](#)

[BCMB-R \(11\) Drug Discovery and Development](#)

[CB-B \(10\) Cell Biology SBIR/STTR](#)

## Molecular and Cellular Neuroscience Small Business SEP [ETTN (13)]

### [\[ETTN \(13\) Roster\]](#)

The topics covered in the ETTN (13) Molecular and Cellular Neuroscience Small Business SEP include those areas on the molecular and cellular level. In general, the projects involve development of devices, reagents, and software to probe channels, signal transduction, and the transducers themselves. Studies may involve basic biological processes that underlie or may be altered by disease processes. Examples of devices might include development of imaging and recording techniques; analytical and system controlling software; monitoring and assay platforms; neuroprosthetic devices; biosensors; and stem cells and cell culture systems. Projects might also focus on neurodrug discovery and development; molecular manipulation and engineering; development of specific research reagents and assays; therapeutics; and proteins that interact with and modulate neuroreceptors, transporters and transducers. Areas of interest include:

- Development of devices, reagents, and software to probe channels, signal transduction, and the transducers themselves.
- Studies may involve basic biological processes that underlie or may be altered by disease processes.
- Devices may include development of imaging and recording techniques, analytical and system controlling software, monitoring and assay platforms, neuroprosthetic devices, biosensors, and stem cells and cell culture systems.
- Projects may also focus on neurodrug discovery and development, molecular manipulation and engineering, development of specific research reagents and assays, therapeutics, and proteins that interact with and modulate neuroreceptors, transporters and traducers.

**Study sections with most closely related areas of similar science listed in rank order are:**

[ETTN 10 - Clinical Neurophysiology, Devices, Auditory Devices and Neuroprosthesis Small Business SEP](#)

[ETTN \(11\) - Pharmacology and Diagnostics for Neuropsychiatric Disorders and Neural Systems Small Business SEP](#)

[ETTN 12 - Visual Systems Small Business SEP](#)

[Genes, Genomes and Genetics \(GGG\) IRG](#)

[Biobehavioral and behavioral Processes \(BBBB\) IRG](#)

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Last updated: November 19, 2008



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